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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,757	02/14/2002	Steven Hauptman	1619-US	1786

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Legal Department  
Teradyne, Inc.  
321 Harrison Avenue  
Boston, MA 02118

EXAMINER

TERESINSKI, JOHN

ART UNIT PAPER NUMBER

2858

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/076,757

Applicant(s)

HAUPTMAN, STEVEN

Examiner

John Teresinski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 7/6/2004.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-8 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,718,117 to McDunn et al..

Regarding claim 1, McDunn et al. disclose a printed circuit board assembly having:

a first circuit board (45) having a first device side, the first device side having a portion configured to mount a first plurality of semiconductor devices (column 4 lines 50-54);

a second circuit board (45) having a second side and disposed in confronting parallel relationship to the first circuit board (column 4 lines 50-54); and

a border (Fig. 5, elements 12, 14) interposed between the first and second boards and disposed around the first and second portions to form a liquid tight container with an inlet (52) to receive electrically nonconducting liquid and an outlet for discharging (column 4 lines 16-21, column 5 lines 22-28).

Regarding claim 2, McDunn et al. disclose channel cards for use in a semiconductor tester (column 6 lines 7-13).

Regarding claim 3, McDunn et al. disclose a border element having a thin metallic wall of a uniform height and respective top and bottom sealing edges (12, 14) and respective first and

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second seals disposed between the top and bottom sealing edges and the first and second device sides (column 5 lines 22-28, 36-38).

Regarding claim 4, McDunn et al. disclose the first and second printed circuit boards have devices mounted solely on the first and second device sides (column 4 lines 46-65).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDunn et al. in view of U.S. Patent No. 6,731,327 to Kujawa et al..

Regarding claims 5 and 6, McDunn et al. teaches the printed circuit board assembly as described above but does not disclose a computer workstation or a testhead adapted for being carried by a manipulator. Kujawa et al. disclose that it is well known in the art to test printed circuit boards with a computer workstation and a testhead adapted for being carried by a manipulator (column 2 lines 22-29) including cooling of the printed circuit board/DUT (column 1 lines 41-43 and column 2 lines 24-26). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a computer workstation and testhead as taught by Kujawa et al. into the cooling system of McDunn et al. to ensure the correct functioning of electronic components loaded on the board.

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Regarding claim 4, McDunn et al. disclose the first and second printed circuit boards have devices mounted solely on the first and second device sides (column 4 lines 46-65).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,103,374 to Azar.

Azar disclose a cooling channel including mounting electronic devices on confronting sides of a pair of circuit boards placed in parallel (Fig. 6), the circuit boards within a fluid channel/border for immersing electronic devices into an electrically nonconducting liquid inside the container (column 2 lines 11-26, column 3 lines 22-27, Fig. 6). Azar does not disclose forming a liquid tight container. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include forming a liquid tight container out of the fluid channel in Azar for the purpose of providing a means for retaining cooling fluid in the cooling channel.

### ***Response to Arguments***

Applicant's arguments filed 7/6/2004 have been fully considered but they are not persuasive.

In response to applicant's argument that McDunn et al. does not disclose immersion cooling, in claim 1, the examiner disagrees. During patent examination, the pending claims must be "given the broadest reasonable interpretation consistent with the specification." Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly

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than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969). In this instance providing a constant flow of spray onto the electronic device (see McDunn et al. column 4 lines 10-13, column 5 lines 41-42) would immerse the electronic devices with a cooling fluid. Further, "immersion cooling" is not recited in claim 1. Regarding applicant's arguments of claim 8, applicant is referred to Azar above.

In response to applicant's argument that McDunn et al. does not disclose circuit boards in a confronting parallel relationship of two boards cooperating to form a sealed enclosure in claim 1, the examiner disagrees. Applicant is referred to Fig. 5 of McDunn et al. in which the circuit boards (45) are in a parallel confronting relationship and cooperate to form a sealed enclosure. The direction of the electronic devices mounted on the circuit boards face in the same direction and are in a parallel confronting relationship.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Teresinski whose telephone number is (571) 272-2235. The examiner can normally be reached on M-F 8:30 - 5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (571) 272-2233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JT  
JT

September 14, 2004

  
ANJAN DEB  
PRIMARY EXAMINER